



**DEPARTMENT OF DEFENSE**

# **JOINT AUDIT REPORT**

## **DEPOT MAINTENANCE CAPACITY AND UTILIZATION MEASUREMENT**

**Report No. 99-192**

**June 23, 1999**

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### **Acronyms**

DBP  
DLA

Defense Depot Maintenance Council Business Plan  
Defense Logistics Agency



INSPECTOR GENERAL  
DEPARTMENT OF DEFENSE  
400 ARMY NAVY DRIVE  
ARLINGTON, VIRGINIA 22202

June 23, 1999

MEMORANDUM FOR DEPUTY UNDER SECRETARY OF DEFENSE (LOGISTICS)  
ASSISTANT SECRETARY OF THE NAVY (FINANCIAL  
MANAGEMENT AND COMPTROLLER)  
ASSISTANT SECRETARY OF THE AIR FORCE  
(FINANCIAL MANAGEMENT AND COMPTROLLER)  
AUDITOR GENERAL, DEPARTMENT OF THE ARMY  
DIRECTOR, JOINT DEPOT MAINTENANCE ACTIVITIES

SUBJECT Audit Report on Depot Maintenance Capacity and Utilization Measurement  
(Report No 99-192)

We are providing this report for review and comment. The Army and the Navy did not respond to the draft report; however, we considered comments from the Deputy Under Secretary of Defense (Logistics), the Director, Joint Depot Maintenance Activities Group, and the Air Force in preparing the final report.

DoD Directive 7650.3 requires that all recommendations be resolved promptly. As a result of the Deputy Under Secretary of Defense (Logistics) comments, we revised Recommendations 1.b (2) and 1.b (3). We revised draft Recommendation 1.c, renumbered it Recommendation 3.c, and redirected it to the Military Departments. Additionally, as a result of Director, Joint Depot Maintenance Activities Group comments, we revised Recommendation 2. We, therefore, request that the Deputy Under Secretary of Defense (Logistics) provide comments on Recommendation 1.b (2) and 1.b (3), the Army and the Navy provide comments on Recommendations 3.a, 3.b, and 3.c, and the Air Force provide comments on Recommendation 3.c by August 23, 1999.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. Tilghman A. Schraden at (703) 604-9186 (DSN 664-9186), email <tschraden@dodig.osd.mil>, or Mr. Thomas D. Kelly at (215) 737-3886 (DSN 444-3886), email <tkelly@dodig.osd.mil>. See Appendix C for the report distribution. The audit team members are listed inside the back cover.

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## Office of the Inspector General, DoD

**Report No. 99-192**  
(Project No 8LB-5026)

**June 23, 1999**

### **Depot Maintenance Capacity and Utilization Measurement**

#### **Executive Summary**

**Introduction.** This audit was requested by the Joint Logistics Commanders and was performed as a joint audit effort under the auspices of the DoD Joint Logistics Audit Planning Group. The Office of the Inspector General, DoD, led this effort, with participation from the Army, the Navy, and the Air Force audit organizations. Within 90 days after the beginning of a new fiscal year, the Military Departments and the Defense Logistics Agency are to report capacity and utilization data for their depots, logistics centers, maintenance bases, and shipyards (maintenance depots) to the Deputy Under Secretary of Defense (Logistics). The data are incorporated into the Defense Depot Maintenance Council Business Plan (DBP) and used to establish goals and identify excess and consolidation possibilities. Within the Military Departments, 24 maintenance depots report capacity and utilization data. Beginning in December 1997, the 24 maintenance depots were required to submit data in compliance with DoD Handbook 4151.18, "Depot Maintenance Capacity and Utilization Measurement," January 24, 1997 (Measurement Handbook).

**Objectives.** We determined whether the Military Departments used and complied with the Measurement Handbook to calculate capacity and utilization data reported in the June 1998 draft FYs 1998 through 2003 DBP, and whether the approach described in the Measurement Handbook would enhance the overall credibility of DoD decisions affecting workload reductions and workload redistributions. We also reviewed the management control program as it applied to the audit objectives.

**Results.** The Military Departments generally did not use or fully comply with the Measurement Handbook to calculate capacity and utilization data reported in the June 1998 draft DBP. Of the nine maintenance depots we reviewed, four either did not make the required capacity calculations or used superseded and unsanctioned guidance to generate data for the June 1998 draft DBP. None of the maintenance depots we reviewed fully complied with the methodology of the Measurement Handbook. As a result, the capacity data generated by the Military Departments and incorporated into the June 1998 draft DBP was inaccurate, outdated, and not fully comparable, in effect, the credibility of DoD decisions was not assured.

We identified material management control weaknesses. See Appendix A for details on the management control program.

**Summary of Recommendations** We recommend that the Deputy Under Secretary of Defense (Logistics) revise the Measurement Handbook to include clearer guidance and additional control procedures, and direct the Department of the Navy either to use the Measurement Handbook as authored or to submit revisions that accurately reflect the methodology used to measure capacity and utilization data at shipyards. We recommend that the Director, Joint Depot Maintenance Activities Group revise the reference to the Measurement Handbook in the final FYs 1998 through 2003 DBP. We also recommend that the Military Departments implement effective management controls that will provide for full compliance with the requirements of the Measurement Handbook, make depot-level maintenance personnel and organizations accountable for proper use of the Measurement Handbook, and instruct personnel who actually use the Measurement Handbook as to its designed purpose. Additionally, we recommend that the Military Departments establish a joint standard package for training depot maintenance personnel.

**Management Comments** The Deputy Under Secretary of Defense (Logistics) concurred with the recommendations to revise the Measurement Handbook and to task the Navy for necessary changes to the Measurement Handbook. The Deputy Under Secretary proposed alternative wording of the recommendation establishing requirements for an independent validation. The Deputy Under Secretary proposed establishing a requirement to make the Military Departments responsible for an independent validation of the key aspects of the capacity and utilization process and to specify assignment and qualifications of the personnel involved in the process. The Deputy Under Secretary also proposed that the recommendation to establish a joint standard package for training be redirected to the Military Departments. The Director, Joint Depot Maintenance Activities Group concurred that the DBP needed correction and revised the reference to the Measurement Handbook in the final FYs 1998 through 2003 DBP. The Army and the Navy did not comment on the draft report. The Air Force concurred with the recommendation to implement effective management controls, make depot-level maintenance personnel and organizations accountable, and instruct personnel on the designed purpose of the Measurement Handbook. A discussion of the management comments is in the Finding section of the report and the complete text is in the Management Comments section.

**Audit Response.** Comments from the Deputy Under Secretary, the Director, Joint Depot Maintenance Activities Group, and the Air Force were responsive. As a result of comments from the Deputy Under Secretary, we revised recommendations on the capacity and utilization process to include the responsibilities of the Military Departments, and we redirected the recommendation to the Military Departments to establish a joint standard training package. As a result of comments from the Director, Joint Depot Maintenance Activities Group, we revised the recommendation to revise the reference to the Measurement Handbook in the DBP. We request that the Deputy Under Secretary and the Military Departments provide comments in response to the final report by August 23, 1999.

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## Background

This audit was performed under the auspices of the DoD Joint Audit Planning Group in response to a request from the Joint Logistics Commanders. The Joint Logistics Commanders, namely the Commander, U.S. Army Materiel Command, the Deputy Chief of Naval Operations (Logistics), the Commander, U.S. Air Force Materiel Command, the Deputy Chief of Staff (Installations and Logistics), U.S. Marine Corps, and the Director, Defense Logistics Agency (DLA), advise the Deputy Under Secretary of Defense (Logistics) on maintenance matters. Subordinate to the Joint Logistics Commanders, the Joint Group on Depot Maintenance, which consists of top maintenance staff members from the Joint Logistics Commanders organizations, is responsible for reviewing the depot maintenance function within the Military Departments and DLA. The Joint Depot Maintenance Activities Group located in Dayton, Ohio, carries out the day-to-day responsibilities of the Joint Group on Depot Maintenance, to include business planning.

Each Service and DLA owns and operates its own organic depot maintenance infrastructure. DoD spends about \$8 billion annually on depot-level organic maintenance. The bulk of the work load is associated with ships and aircraft, with each accounting for about 40 percent (by dollar value) of the total effort. The remaining 20 percent is for combat vehicle, missile, and other ground equipment system work loads. Consistent with the Defense Logistics Strategic Plan, depot maintenance operations are focused on the readiness and sustainability of the Total Force in both peace and war. The Military Departments are downsizing the organic depot infrastructure of 24 maintenance depots, primarily by implementing base realignment and closure decisions, therefore, by 2001, only 19 major organic bases, depots, logistics centers, and shipyards (maintenance depots) will remain in operation.

DoD has long sought to improve its ability to capture accurate capacity and utilization data for maintenance depots. Publication of DoD Handbook 4151.18, "Depot Maintenance Capacity and Utilization Measurement," January 24, 1997 (Measurement Handbook), was expected to enhance the credibility of DoD consolidation decisions. Within 90 days after the beginning of a new fiscal year, the Military Departments and DLA are to report capacity and utilization data for their maintenance depots to the Deputy Under Secretary of Defense (Logistics). The Joint Depot Maintenance Activities Group incorporates the data into the Defense Depot Maintenance Council Business Plan (DBP). The Defense Depot Maintenance Council, composed of the Joint Logistics Commanders and other designated representatives, advises the Deputy Under Secretary of Defense (Logistics) on depot maintenance matters. Through data portrayal, the DBP provides a picture of the current size of depot-level maintenance business and the projected effects of legislation, policy, management actions, budget decisions,

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and downsizing initiatives. The portrayals of budgets, work loads, and personnel serve as baselines for goals and analyses of excess and for consolidation possibilities. The DBP is published every 2 years and covers a 6-year period. The last DBP was issued on January 14, 1997, for FYs 1996 through 2001. The DBP for FYs 1998 through 2003 was issued in draft form on June 29, 1998, and in final form in March 1999. The Military Departments and DLA were required to submit data in compliance with the Measurement Handbook by the end of December 1997 for inclusion in the June 1998 draft DBP.

This audit was the second time we reviewed the effectiveness of the Military Departments in measuring the capacity and utilization of their maintenance depots. Our first report, Inspector General, DoD, Audit Report No. 92-127, "Capacity and Utilization of DoD Maintenance Depots," August 14, 1992, states that, although improvements have been made, the maintenance depot's capacity and utilization data that the Military Departments reported to DoD were inaccurate or incomplete. The data were inaccurate and incomplete because the Military Departments did not fully comply with the requirements for calculating capacity and utilization data contained in DoD Handbook 4151.15-H, "Depot Maintenance Production Shop Capacity Measurement Handbook," July 28, 1976 (1976 handbook) and its December 1990 revised draft. Delays in formally issuing the draft revision to the 1976 handbook and certain ambiguities in the revised draft also contributed to the deficiencies. The report recommended that the then Assistant Secretary of Defense (Production and Logistics) formalize the revised draft. The report also recommended that the Military Departments implement effective management control procedures that would provide for full compliance with the requirements of the revised draft. The then Assistant Secretary of Defense (Production and Logistics) and the Military Departments agreed to take the recommended corrective actions. On January 24, 1997, the 1976 handbook was superseded by DoD Handbook 4151.18-H and, in turn, the December 1990 revised draft and several subsequent ones were formally finalized.

## Objectives

The objectives of the audit were to determine whether the Military Departments used and complied with the Measurement Handbook to calculate capacity and utilization data reported in the June 1998 draft FYs 1998 through 2003 DBP, and whether the approach described in the Measurement Handbook would enhance the overall credibility of DoD decisions affecting workload reductions and workload redistributions. We also included a review of the management control program as it applied to the audit objectives. See Appendix A for a discussion of the scope, methodology, and our review of the management control program and for a summary of prior coverage.

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## **Measurement Handbook**

The Military Departments generally did not use or fully comply with the Measurement Handbook to calculate capacity and utilization data reported in the June 1998 draft DBP. Of the nine maintenance depots we reviewed, four either did not make the required capacity calculations or used superseded and unsanctioned guidance to generate data for the June 1998 draft DBP because of administrative breakdowns and methodology disagreements. None of the maintenance depots we reviewed fully complied with the methodology of the Measurement Handbook because of unfamiliarity with its contents. The maintenance depots also did not use or fully comply with the Measurement Handbook because, while its approach was fundamentally sound, the Measurement Handbook was sometimes unclear and lacked sufficient control procedures. As a result, capacity data generated by the Military Departments and incorporated into the June 1998 draft DBP was substantially inaccurate, outdated, and not fully comparable, in effect, the credibility of DoD decisions was not assured.

## **Measurement Handbook Objectives and Procedures**

The Measurement Handbook provides a common methodology to measure the capacity and utilization of DoD maintenance depots. The Measurement Handbook and the 1976 handbook essentially call for the same calculation process. However, the Measurement Handbook methodology, in contrast to the 1976 handbook, omits field team personnel in work positions, reduces the number of direct labor hours per work position, discounts bottlenecks as a factor, establishes a set availability factor, and categorizes the type of maintenance performed in greater detail. Some of those changes in methodology had already been incorporated in draft changes to the 1976 handbook. Both the Measurement Handbook and the 1976 handbook omit support personnel in work positions.

The primary aim of the Measurement Handbook is to calculate the total capacity index, expressed in direct labor hours, that a depot can effectively employ annually on a single shift, 40-hour week while producing the product mix that the facility is designed to accommodate. Utilization indexes are merely mathematical ratios of funded and other workload requirements to total capacity. Total capacity is not unconstrained physical capacity, but rather is constrained by the availability of manpower to operate existing work positions.

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The only variable in determining capacity among maintenance depots is the work position. The work position is defined as a designated amount of space and equipment that is occupied by a single direct production worker to accomplish assigned tasks on a full-time basis. The formula for computing the capacity of individual shops is as follows:

work positions times availability factor (0.95) times annual productive hours (1,615)

The formula is to be used for all maintenance depots except shipyards. At shipyards, the capacity of output shops is calculated the same as individual shops, but the capacity of dry docks is to be calculated separately because counting work positions on ships is impractical. Dry dock capacity represents the maintenance work load of the largest ship that can effectively be performed less the days of programmed annual maintenance. The total capacity of shipyards is calculated by adding the capacity of dry docks and workshops.

The capacity of all maintenance depots is also broken down and categorized by the type of work performed by production shops, such as aircraft airframe and missiles and missile components. Within the Military Departments, 24 maintenance depots report capacity and utilization data. See Appendix B for a list of the 24 maintenance depots and the capacity sizes reported in the June 1998 draft DBP.

## Measurement Handbook Use and Compliance

The Military Departments did not use or fully comply with the Measurement Handbook in calculating capacity and utilization data for the June 1998 draft DBP. To evaluate the Military Departments' use of the Measurement Handbook, we reviewed the calculation process at nine maintenance depots. Specifically, we visited two Army depots, two naval aviation depots, two naval shipyards, two Air Force logistics centers, and one Marine Corps logistics base (see Appendix B). Annually, the nine maintenance depots spend about \$4 billion or half of the DoD annual expenditure for depot-level organic maintenance. To evaluate the Military Departments' compliance with the Measurement Handbook, we compared the capacity sizes shown in the June 1998 draft DBP with support documentation maintained at the nine maintenance depots. We also calculated the capacity of shops on a random basis using the Measurement Handbook. Because the Military Departments did not use and fully comply with the Measurement Handbook, capacity data generated and incorporated into the June 1998 draft DBP was substantially inaccurate, outdated, and not fully comparable, in effect, the credibility of DoD decisions was not assured.

**Military Departments' Use of the Measurement Handbook.** Four of the nine maintenance depots we reviewed did not use the Measurement Handbook to calculate the capacity and utilization data shown in the June 1998 draft DBP. The

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Measurement Handbook stipulates that it is effective immediately and is mandatory for use by all the DoD Components. Furthermore, the June 1998 draft DBP states

Capacity and utilization data were computed in accordance with the DoD 4151 18-H, the DoD Depot Maintenance Capacity and Utilization Handbook, 24 January 1997, for all depot activities. Capacity data represents the total capacity at each depot, including reserve and excess capacity

However, four maintenance depots did not make the capacity calculation as required by the Measurement Handbook or used superseded and unsanctioned guidance to calculate the capacities shown in the draft DBP. The reference to computing capacity and utilization data in accordance with the Measurement Handbook is not accurate and should be revised for the final DBP. The following table shows the degree that the Measurement Handbook was used at the nine maintenance depots we selected for review.

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### Methodology Used to Calculate Capacity for FY 1997

<u>Organization</u>	<u>Methodology</u>
Army	
Anniston Army Depot	1976 Handbook
Tobyhanna Army Depot	Measurement Handbook
Navy	
Jacksonville Naval Aviation Depot	Measurement Handbook
North Island Naval Aviation Depot	Measurement Handbook
Norfolk Naval Shipyard	Unsanctioned Guidance
Puget Sound Naval Shipyard	Unsanctioned Guidance
Air Force	
Oklahoma City Air Logistics Center	Results not Processed
Warner Robins Air Logistics Center	Results not Processed
Marine Corps	
Marine Corps Logistics Base Barstow	No Calculation Made

Four DoD maintenance depots did not use the Measurement Handbook as required because of administrative breakdowns and methodology disagreements made possible by a lack of management emphasis

#### **Administrative Procedures Affecting the Measurement Handbook.**

Two maintenance depots did not use the Measurement Handbook, as required, because of administrative breakdowns. Responsible personnel at the two maintenance depots told us that they did not use the Measurement Handbook at the end of FY 1997 because either their headquarters did not issue the Measurement Handbook to them on time or personnel versed in calculating depot capacity had retired. The Measurement Handbook was in effect 9 months before

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capacity data were to be calculated at the end of FY 1997 and another 6 months before the data were incorporated into the initial draft DBP on June 28, 1998. In place of the Measurement Handbook, the two maintenance depots reported capacity data in the draft DBP based on FY 1996 calculations or superseded guidance.

**Methodology Affecting the Measurement Handbook.** The Naval Sea Systems Command used unsanctioned guidance to compute the capacity of shipyards at the end of FY 1997 because of methodology disagreements with the Measurement Handbook. For the two shipyards we selected for review as well as the naval shipyards at Portsmouth and Pearl Harbor, the Naval Sea Systems Command calculated their respective capacities. The shipyards played no role in calculating or authenticating their computed capacities. Instead, the Naval Sea Systems Command submitted capacity data for all the shipyards. Naval Sea Systems Command officials, who actually wrote the shipyard portion of the Measurement Handbook, believed that the Measurement Handbook methodology was deficient and would not produce accurate shipyard capacities.

Instead of the Measurement Handbook, the Naval Sea Systems Command used the results of a 1992 study entitled, "Report of Nuclear Capable Naval Shipyard Capacity Study." The 1992 study used the capacity parameter, maximum capacity workload as compared with the Measurement Handbook's parameter, "direct labor hours." Maximum capacity work load was quantified as direct labor men per day and essentially represented the largest and most complex work load a shipyard could effectively perform considering process constraints driven by labor skill, event sequencing, and production complexity. The 1992 study did not quantify the constraints but summarily arrived at the total capacity by analyzing each shipyard's performance over the 8-year period from FY 1984 through FY 1991.

By using the 1992 study, the same capacity, representative of conditions in place up to 18 years ago, has been reported each year for each shipyard. Further, the parameter, constraints and calculation process employed by the 1992 study comprised a methodology fundamentally different than that described in the Measurement Handbook and employed currently by other depots. The Measurement Handbook should be either used or revised to reflect the actual methodology adopted to compute shipyard capacities.

**Military Departments' Compliance with the Measurement Handbook.** None of the maintenance depots we reviewed completely followed the methodology of the Measurement Handbook in calculating capacity. We attributed the noncompliance with the Measurement Handbook to the depots' unfamiliarity with its contents, made possible by a lack of management emphasis. The issuance of the Measurement Handbook did not significantly change how maintenance depots were to identify work positions and compute capacity. Thus, although some maintenance depots did not strictly use the Measurement Handbook, we could evaluate their compliance with much of the Measurement Handbook's methodology. For those maintenance depots that used unsanctioned guidance, did not maintain adequate documentation, or did not report the results of their

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calculations at the end of FY 1997, our compliance evaluation was generally limited to summary analyses of whether depots adhered to specific methodology of the Measurement Handbook

**Army Depot Data.** Of the two Army depots we reviewed, Anniston did not use the Measurement Handbook to calculate its capacity at the end of FY 1997, Tobyhanna did

**Anniston Depot.** We could not sample and perform a detailed analysis of the capacity data that Anniston Depot reported in the June 1998 draft DBP. The June 1998 draft DBP listed the capacity of the Anniston Depot as 3,200,400 direct labor hours (2,086 work positions) at the end of FY 1997. The Anniston Depot used the 1976 handbook to calculate its capacity at the end of FY 1997, and because it did not maintain summary sheets by workshop, we could not verify its reported data in the June 1998 draft DBP. However, our summary analysis of the capacity calculation made by Anniston Depot in 1997 showed that Anniston did not adhere to the Measurement Handbook requirement to omit work positions for support equipment.

**Tobyhanna Depot.** The results of our sample and summary analysis indicated that Tobyhanna Depot overstated its capacity in the June 1998 draft DBP. The June 1998 draft DBP listed the capacity of the Tobyhanna Depot as 4,147,000 direct labor hours (2,703 work positions). Our review identified a net overstatement of 170,301 direct labor hours (111 work positions) in the Tobyhanna Depot reported capacity. One prominent reason for the net overstatement (33,754 direct labor hours or 22 work positions) was that Tobyhanna Depot did not follow the Measurement Handbook requirement to omit space for field teams. In addition, our sample of 27 workshops (of 49 workshops in place) at the Tobyhanna depot identified 136,548 direct labor hours (89 work positions) that should not have been included in Tobyhanna Depot total capacity. The overstated capacity occurred -- not because the Tobyhanna Depot did not adhere to the Measurement Handbook methodology -- but because of minor errors in arithmetic and in accounting for changes in on-hand equipment that necessitate work positions.

**Naval Aviation Depot Data.** Both naval aviation depots we reviewed used the Measurement Handbook to calculate their capacity for the end of FY 1997.

**Jacksonville Depot.** The results of our sample and summary analysis indicated that the Jacksonville Depot overstated its capacity in the June 1998 draft DBP. The June 1998 draft DBP listed the capacity of the Jacksonville Depot as 4,769,000 direct labor hours (3,108 work positions) at the end of FY 1997. Our review identified a net overstatement of 1,921,246 direct labor hours (1,252 work positions) in the Jacksonville Depot reported capacity. The net overstatement resulted largely from the Naval Air Systems Command, at the instruction of the Joint Depot Maintenance Activities Group, adding 869,000 net direct labor hours (566 work positions) to that reported by the



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Jacksonville Depot The additional direct labor hours were for a production shop category not authorized by the Measurement Handbook, fleet and field support, that was, by definition, performed on location at air bases not physically located at the Jacksonville Depot and that was not made up entirely of direct labor Also, the net overstatement resulted largely from the Jacksonville Depot erroneously including 1,198,000 direct labor hours (781 work positions) not physically located within the confines of the maintenance depot, as required by the Measurement Handbook The off-site capacity was part of the Jacksonville Depot but primarily was located some 600 miles away at the Naval Air Station Oceana, Virginia Beach, Virginia In addition, our random sample of 42 work shops (of 90 work shops actually on hand) at the Jacksonville Depot identified 145,754 direct labor hours (95 work positions) that should have been included in the Jacksonville Depot capacity total The understated capacity occurred because the Jacksonville Depot did not adhere to the Measurement Handbook requirements of computing space based on maximum overhaul capability in a 40-hour week (instead of on what is merely scheduled) as well as counting work positions only once when they support multiple work stations.

**North Island Depot.** The results of our sample and summary analysis indicated that North Island Depot overstated its capacity in the June 1998 draft DBP. The June 1998 draft DBP listed the capacity of North Island Depot as 4,949,000 direct labor hours (3,226 work positions) at the end of FY 1997 Our review identified a net overstatement of 837,210 direct labor hours (546 work positions) in the North Island Depot reported capacity The overstatement largely resulted from the Naval Air Systems Command, at the instruction of the Joint Depot Maintenance Activities Group, adding 792,717 net direct labor hours (517 work positions) to that reported by the North Island Depot The additional direct labor hours were mostly for a production shop category, fleet and field support, that was not authorized by the Measurement Handbook Fleet and field support was performed on location at air bases not physically located at the North Island Depot and was not made up entirely of direct labor In addition, our random sample of 44 work shops (of 132 work shops actually on hand) at the North Island Depot identified 44,493 direct labor hours (29 work positions) that should not have been included in the North Island capacity total The overstated capacity occurred -- not because the North Island Depot did not adhere to the Measurement Handbook requirements -- but because of minor errors in arithmetic and in accounting for decreases in on-hand equipment that necessitated work positions

**Naval Shipyard Data.** We could not sample and perform a detailed analysis of the capacity data that naval shipyards reported in the June 1998 draft DBP The June 1998 draft DBP listed the capacity of Norfolk and Puget Sound Shipyards as 12,000,000 direct labor hours (7,821 work positions) and 14,000,000 direct labor hours (9,125 work positions), respectively However, the shipyards did not calculate their capacity at the end of FY 1997 in accordance with the Measurement Handbook As previously discussed, the Naval Sea Systems Command reported the total capacity of its shipyards using a methodology different than that required by the Measurement Handbook That methodology

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lumped the capacity of dry docks and output shops into one shipyard figure, whereas the Measurement Handbook called for the capacity of output shops to be computed and reported separately in five categories—electronics, forge, foundry, machine, and reparable. Thus, we could not verify the reported data in the June 1998 draft DBP. Nevertheless, as a means of determining the materiality and soundness of separately reporting the capacity of output shops, we used the Measurement Handbook to compute the capacity of the output shops at the Norfolk and Puget Sound Shipyards in October 1998. Our calculations showed that the capacity of output shops was material. By applying the Measurement Handbook, the capacity of the Norfolk Shipyard output shops totaled 896,000 direct labor hours (584 work positions), while the capacity of the Puget Sound Shipyard output shops totaled 540,056 direct labor hours (352 work positions).

**Air Logistics Center Data.** We could not sample and perform a detailed analysis of the capacity data shown for air logistics centers in the June 1998 draft DBP. The June 1998 draft DBP lists the capacity of the Oklahoma City and Warner Robins Air Logistics Centers as 8,285,000 direct labor hours (5,400 work positions) and 7,848,000 direct labor hours (5,115 work positions), respectively. However, the logistics centers did not report the results of their capacity calculations at the end of FY 1997 in accordance with the Measurement Handbook, and the calculations made by the air logistics center did not agree with the totals in the June 1998 draft DBP. Accordingly, we could not verify capacity data shown for air logistics centers in the June 1998 draft DBP. Our summary analysis of capacity calculations made by the Oklahoma City and Warner Robins Air Logistics Centers in 1998 showed that both centers used the Measurement Handbook but did not adhere to the requirement to exclude field teams and support positions.

**Marine Corps Logistics Base Data.** We could not sample and perform a detailed analysis of the capacity data shown for Barstow in the June 1998 draft DBP. The June 1998 draft DBP listed the capacity of Barstow as 1,037,000 direct labor hours (676 work positions). However, Barstow did not calculate its capacity at the end of FY 1997 in accordance with the Measurement Handbook. Accordingly, we could not verify the capacity data shown for Barstow in the June 1998 draft DBP. Our summary analysis of the capacity calculation made by Barstow in 1998 showed that Barstow used the Measurement Handbook and adhered to its methodology.

**Management Emphasis.** The Military Departments did not sufficiently emphasize using the Measurement Handbook to calculate depot maintenance capacity sizes. Maintenance depots did not fully use and comply with the Measurement Handbook because of administrative breakdowns, methodology disagreements, and unfamiliarity, symbolic of a lack of management emphasis at all levels.

**Headquarters Level at the Military Departments.** Lack of management emphasis has been a longstanding cause of the Military Departments not fully using or complying with DoD guidance to measure depot maintenance capacity. Our

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1992 audit report identified significant inaccuracies in the measuring of depot maintenance capacity and attributed the inaccuracies to a lack of emphasis within the Military Departments on effectively implementing the methodology contained in the 1976 handbook, then in effect. Although the Service Headquarters agreed with our recommendation to implement management control procedures that would provide for full compliance with the 1976 handbook, none did. In fact, none of the Service Headquarters have assumed any role or responsibility for depot maintenance capacity and utilization measurement. As a result, the Military Departments either use the Measurement Handbook erratically or do not comply with it. Therefore, the Military Departments need to implement management controls and assess the effectiveness of those controls as part of their self-evaluations under the management control program.

**Depot Level.** The lack of management emphasis was also obvious at maintenance depots. Although the Military Departments assented to the Measurement Handbook before it was published in January 1997, its usage was low at maintenance depots. Shipyards did not use the Measurement Handbook at all, while other depots used the Measurement Handbook sparingly. Overall, maintenance depots essentially made their computations as they had always done and seemed to give little or no importance to capacity and utilization measurement. For example, at none of the maintenance depots we reviewed were personnel formally notified of their duties by including the measurement of capacity and utilization in their job descriptions, and at only the two Army depots were personnel held accountable for performing calculations by including the measurement of capacity and utilization in their performance plans. Similarly, none of the maintenance depots ever assessed their performance as part of a management control review. The lack of management emphasis at depots may have been fostered by misconceptions about the purpose of the Measurement Handbook.

Responsible depot officials expressed concern to us that workload decisions would be made based on what they considered inadequate methodology contained in the Measurement Handbook. Negative comments made to us about the Measurement Handbook were

Direct labor hours is too simplistic a parameter

Work position identification is subjective

Availability factor is too high

Skill level of workers is not considered

Equipment efficiency is not considered

Shift work is not factored in

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In fairness to the Measurement Handbook, the user complaints about the methodology employed to calculate capacity were fully addressed during the 1980s and early 1990s in studies conducted within and outside the Government. It was concluded within DoD that the Measurement Handbook methodology, in spite of its shortcomings, was the best available approach to depot maintenance capacity and utilization measurement. The Measurement Handbook was not designed to provide an accurate measure of capacity as perceived by many depot maintenance personnel. Instead, it was designed to provide a quick and simple process (least use of resources) of arriving at an indication (an index) of capacity that would be comparable among all maintenance depots (direct labor hours). According to DoD officials, further study would have to be done before any decisions were made on reductions and realignment. Not only do the Military Departments still need to establish management controls to ensure the use of the Measurement Handbook, they need to make maintenance personnel and depots accountable for the proper use of the Measurement Handbook and instruct the people who actually use it as to its designed purpose.

## **Measurement Handbook Approach**

The maintenance depots did not use or fully comply with the Measurement Handbook because, while its approach was fundamentally sound, the Measurement Handbook was sometimes unclear and lacked sufficient control procedures. To evaluate the approach described in the Measurement Handbook, we essentially judged whether the guidance and control procedures in place were sufficient to ensure its success. Our judgement was based on whether the discrepancies we found could have been avoided or at least mitigated with clearer guidance or additional management control procedures. We concluded that the Measurement Handbook approach could be improved in five areas, two of which were discussed in our 1992 report. As stated earlier, we recommended that the Assistant Secretary of Defense (Production and Logistics) formalize the then draft DoD Handbook to include a cut-off date for measuring capacity data and procedures for independently validating measurement data. The Assistant Secretary of Defense agreed but did not take the steps necessary to establish the requirements in the Measurement Handbook. Our current review reconfirmed the need for those additional requirements as well as three others that would benefit the approach of the Measurement Handbook. We also concluded that the Measurement Handbook approach would benefit from a standard training package to ensure consistency in the calculation process.

**Date of Capacity Calculations.** The Measurement Handbook does not establish an as of date for making capacity calculations. The Measurement Handbook provides that a summary sheet should be submitted to DoD within 90 days after the end of each fiscal year. Also, the first column of the summary sheet, under the heading DoD Fiscal Years, is captioned Past Actual. Those requirements suggest that the calculation should be done in October, November, or December of each

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year. Yet, three of the maintenance depots that we reviewed did not comply with this time frame and none of the maintenance depots performed calculations on the same as of date. An as of date would make capacity computations more comparable among maintenance depots.

**Independent Reviews of Calculations.** The Measurement Handbook does not require that capacity calculations be independently reviewed. The only way the possibility of inconsistent identification of work positions can be mitigated other than training, is after-the-fact validation. This is not to suggest that the entire process be reviewed in detail. Rather, an independent review would ensure that key aspects of the process are accomplished; that is, applicability and scope requirements are adhered to, standard calculating factors are used, calculation steps are performed as prescribed, and appropriate documentation is maintained. Independent reviews would better ensure that the Measurement Handbook methodology was followed.

**Personnel Responsible for Calculations.** The Measurement Handbook does not assign responsibility and delineate the qualification of personnel involved in the capacity calculation process. Maintenance depots had a wide variance in the level of personnel expertise involved in the measurement process. Among the maintenance depots we reviewed, industrial engineers and technicians performed the capacity calculation alone or together with shop personnel. Some maintenance depots employed teams to make the calculation while others relied on a host of individuals to make the calculation. Some individuals involved in the calculation process had years of experience; but for other individuals, it was a first time experience. Assigning responsibility and delineating the qualification of personnel who should perform the calculation process would ensure more comparable information and enhance decisionmaking.

**Requirements of the Calculation Process.** The Measurement Handbook does not adequately describe two significant requirements of the calculation process: the omission of field teams and support positions as well as the assignment of production shop categories.

**Field Teams and Support Positions.** The Measurement Handbook, chapter 3, "Capacity," gives a description of how total capacity is to be calculated in five steps. None of the five steps dictate that depot field teams and general shop support positions are to be excluded. The requirement to omit field teams and support positions is mentioned only in chapter 1, "Applicability and Scope." Four of the maintenance depots that used the Measurement Handbook to calculate their capacity either at the end of FY 1997 or in 1998 erroneously included field teams or support positions in their capacity calculations. Because the personnel who actually performed the calculations were likely to be most familiar with the calculation steps, the requirement to omit field and support positions should be repeated in chapter 3.

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**Production Shop Categories.** The Measurement Handbook describes how total capacity is to be calculated (chapter 3) in five steps. Step 5 states, "Record the shop capacity index and assign a production shop category to the shop." However, the Measurement Handbook provides no procedures for determining and assigning production shop categories. At maintenance depots, the capacity either was not categorized, was categorized improperly, or was categorized using two different methods. For example, Army depots assigned production shop categories based on prorating the work load performed at common workshop space. Other depots categorized the entire space by the type of work the shop primarily was configured to accomplish. Detailed procedures would ensure consistency in categorizing production capacity.

**Applicability of the Capacity Measurement.** The Measurement Handbook does not clearly describe all organic maintenance capability susceptible to capacity measurement. Clearer and more descriptive applicability guidance is needed to ensure that the capacity of all organic depot maintenance capability, on-site as well as off-site, is measured and reported.

**On-Site Capability.** Regional repair centers that were collocated at the two naval shipyards we reviewed performed organic depot maintenance, but they were not part of the maintenance operations of the Norfolk and Puget Sound Shipyards. At the Norfolk Shipyard, regional repair centers for pumps and motors were on hand and had 91 work positions or 139,600 hours of direct labor capacity. At the Puget Sound Shipyard, regional repair centers for circuit breakers, motors, and pumps were on hand and had 89 work positions or 136,548 direct labor hours of capacity. Those calculations were excluded in the capacity amounts we measured for output shops at the Norfolk and Puget Sound Shipyards. However, the Measurement Handbook does not address tenant organic depot capability located at shipyards and possibly other depots.

Similarly, the Maintenance Handbook categorization of output shops at shipyards was not descriptive enough to ensure that all capacity was captured. For example, at both the Norfolk and Puget Sound Shipyards, paint shops were on hand and had 56 work positions or 85,918 direct labor hours of capacity. Paint and several other shops were not included in the capacity amounts we measured for output shops because the Measurement Handbook did not specifically mention them. The Measurement Handbook provides categorizing shipyard output shops only as electronics, forge, foundry, machine, and reparable. None of the categories fit several of the output shops we identified as on hand at shipyards. In addition, responsible maintenance personnel could not say what fell within the category "reparable."

**Off-Site Capability.** At the two naval air depots we reviewed, organic depot maintenance capability was included in their capacity totals even though the capability was not physically located at the Jacksonville and North Island Depots. The Measurement Handbook does not specifically address off-site maintenance capability and, therefore, the inclusion or exclusion of off-site capability was subject to interpretation when making capacity calculations. The Measurement

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Handbook states in chapter 3 that total capacity is to be calculated for a facility and in chapter 1 that its techniques are applicable to both covered and uncovered spaces within the confines of the depot maintenance activity. From those statements, we concluded that off-site maintenance capability should not be included in the capacity calculations of maintenance activities; therefore, we questioned 2,758,000 direct labor hours (1,798 work positions) reported as capacity for the Jacksonville and North Island Depots.

**Training of the Measurement Handbook Approach.** A standard DoD training package would fortify the Measurement Handbook approach. The keys to the success of the Measurement Handbook are that maintenance personnel accede to its approach and apply its methodology objectively and consistently. To be successful, calculators would have to be familiar with all aspects of the Measurement Handbook approach, particularly those procedures associated with identifying work positions – the only variable and most subjective aspect of the capacity calculation process. However, none had received training in implementing the Measurement Handbook approach. Formal, travel-required training programs are not needed; rather video presentations (that easily could be updated and distributed) could provide effective training more efficiently. Training would ensure better consistency in calculations and reduce subjectiveness.

## Summary

DoD made a determined effort to improve the process of calculating accurate capacity and utilization data for maintenance depots. The issuance of the Measurement Handbook in January 1997 overcame years of disagreement within DoD over how best to measure the capacity and utilization of depots. The Measurement Handbook provided users with a common measurement methodology, which was expected to enhance the credibility of DoD decisions affecting workload reductions and workload redistributions. The Measurement Handbook did not necessarily enhance DoD decisionmaking because the Military Departments did not fully embrace its methodology, and the approach described in the Measurement Handbook was sometimes unclear and lacked sufficient control procedures. The success of the Measurement Handbook lies in its approach and the concerted effort of DoD and the Military Departments to emphasize its application and benefits.

## Management Comments on the Finding and Audit Response

**Director, Joint Depot Maintenance Activities Group Comments.** According to the Director, Joint Depot Maintenance Activities Group, the draft report erroneously stated that the Activities Group added capacity to the data reported by

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the Jacksonville and North Island Depots. The Director further stated that the published data were provided by Naval Air Systems Command and nothing was added

**Audit Response.** Although the Activities Group did not add to the capacity data provided for the Jacksonville and North Island Depots, the Naval Air Systems Command added more capacity (a production shop category not authorized by the Measurement Handbook) based on the instructions of the Activities Group. We revised the report, accordingly.

## **Recommendations, Management Comments, and Audit Response**

**Revised, Redirected, and Renumbered Recommendations.** As a result of comments from the Deputy Under Secretary of Defense (Logistics), we revised Recommendations 1.b.(2) and 1.b.(3). We revised and redirected draft report Recommendation 1.c from the Deputy Under Secretary of Defense (Logistics) to the Military Departments and renumbered it Recommendation 3.c. Additionally, as a result of Director, Joint Depot Maintenance Activities Group comments, we revised Recommendation 2

### **1. We recommend that the Deputy Under Secretary of Defense (Logistics):**

**a. Direct the Department of the Navy either to use DoD Handbook 4151.18, "Depot Maintenance Capacity and Utilization Measurement," as authored or to submit revisions to the handbook that accurately reflect the methodology used to measure capacity and utilization data at shipyards.**

**Deputy Under Secretary of Defense (Logistics) Comments.** The Office of the Deputy Under Secretary concurred, stating that naval shipyard data cannot be computed using the current handbook methodology. The Deputy Under Secretary further stated that a tasking would be issued to the Navy within 30 days of the date of the final audit report requesting that a proposed revision to the Maintenance Handbook be submitted within 60 days of the tasking.

**b. Revise DoD Handbook 4151.18, "Depot Maintenance Capacity and Utilization Measurement," to include:**

**(1) Specifying an as of date for measuring capacity and utilization data.**



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**(2) Establishing a requirement to make the Military Departments responsible for performing an independent validation of the key aspects of the capacity and utilization measurement process.**

**(3) Establishing a requirement for the Military Departments to specify assignment of responsibility and delineation of the qualifications of personnel involved in the capacity and utilization calculation process.**

**(4) Repeating the chapter 1 requirement to omit field teams and general support personnel in chapter 3, and adding procedures for determining and assigning production shop categories in chapter 3.**

**(5) Clarifying and providing more descriptive applicability guidance as to on-site and off-site depot-level maintenance.**

**Deputy Under Secretary of Defense (Logistics) Comments.** The Office of the Deputy Under Secretary concurred, stating that a policy letter will be issued within 120 days of the date of the final report providing interim measures pending completion of a revision to the Measurement Handbook. For draft report Recommendations 1.b.(2) and 1.b.(3), the Deputy Under Secretary proposed establishing requirements for the Military Departments to carry out the recommendations, respectively. The Deputy Under Secretary further stated that it was appropriate for the Office of the Secretary of Defense to specify what should be done while allowing the Military Departments to determine how

**Audit Response.** Deputy Under Secretary's comments were responsive. As a result of the comments, we revised Recommendations 1.b (2) and 1.b (3). We request that the Deputy Under Secretary comment on the revised recommendations in response to the final report.

**2. We recommend that the Director, Joint Depot Maintenance Activities Group revise the reference to the use of the DoD Handbook 4151.18-H in measuring capacity and utilization data shown in the final FYs 1998 through 2003 Defense Depot Maintenance Council Business Plan.**

**Joint Depot Maintenance Activities Group Comments.** The Director, Joint Depot Maintenance Activities Group concurred that the DBP reference to the Measurement Handbook needed to be corrected. The Director further stated that the reference in question was revised to read, "Capacity and utilization data were requested to be computed in accordance with the DoD 4151.18-H, the DoD Depot Maintenance Capacity and Utilization Handbook, 24 January 1997, for all depot activities."

**3. We recommend that the Assistant Secretary of the Army (Acquisition, Logistics and Technology), the Assistant Secretary of the Navy (Research, Development and Acquisition), and the Air Force Deputy Chief of Staff for Installations and Logistics:**

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a. Implement management controls that will provide for full compliance with the requirements of DoD Handbook 4151.18-H and assess their effectiveness as part of the management control program.

b. Revise performance plans for maintenance personnel to ensure they are accountable for the proper use of DoD Handbook 4151.18-H and instruct the personnel who actually use DoD Handbook 4151.18-H as to its designed purpose.

c. Establish a joint standard package for training depot maintenance personnel in the benefits and methodologies of measuring capacity and utilization data.

**Deputy Under Secretary of Defense (Logistics) Comments.** The Deputy Under Secretary of Defense (Logistics) proposed that draft report Recommendation 1 c be redirected to the Military Departments because responsibility for training is a function more appropriately assigned to them under Title 10 of the United States Code. The Deputy Under Secretary also proposed alternative wording that added joint to the standard package for training.

**Military Department Comments.** As a result of the Deputy Under Secretary's comments, we renumbered draft Recommendation 1 c., Recommendation 3 c., and redirected it to the Military Departments. The Army and the Navy did not comment on the draft report recommendations. The Air Force concurred with the recommendation to implement effective management controls, make depot-level maintenance personnel and organizations accountable, and instruct personnel on the designed purpose of the Measurement Handbook. Therefore, we request that the Army and the Navy provide comments on Recommendations 3 a, 3 b, and 3 c (numbered as 1 c in the draft report), and the Air Force provide comments on Recommendation 3 c in response to the final report.

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## Appendix A. Audit Process

### Scope

To evaluate whether the Military Departments used and fully complied with the Measurement Handbook to calculate capacity sizes reported in the June 1998 draft DBP, we selected 9 of 24 maintenance depots for review, based on capacity and proximity to audit resources. For the June 1998 draft DBP, 24 maintenance depots of the Military Departments and 1 depot of the Defense Logistics Agency were to submit capacity and utilization data in accordance with the Measurement Handbook. We eliminated the Defense Logistics Agency depot from our review because of its relatively small work load and capacity. The 24 Military Department depots comprised 5 Army, 3 naval aviation, 4 naval shipyards, 2 naval warfare centers, 3 space and naval warfare centers, 5 air logistics centers, and 2 Marine Corps maintenance centers. About 111 million direct labor hours were reported as the capacity of the 24 maintenance depots in the June 1998 draft DBP. We selected for review two Army depots, two naval aviation depots, two naval shipyards, two air logistics centers, and one Marine Corps maintenance center. Annually, the nine maintenance depots spend about \$4 billion or half of the DoD annual expenditure for depot-level organic maintenance. The nine maintenance depots reported about 60 million direct labor hours or 54 percent of the capacity for the 24 maintenance depots of the Military Departments. Documentation (engineering drawings) reviewed in support of the capacity and utilization data shown in the June 1998 draft DBP were current as of September 30, 1997.

**DoD-wide Corporate Level Goals.** In response to the Government Performance Results Act, DoD has established 6 DoD-wide corporate level performance objectives and 14 goals for meeting these objectives. This report pertains to achievement of the following objective and goal:

**Objective:** Fundamentally reengineer the Military Departments and achieve a 21st century infrastructure. **Goal:** Reduce costs while maintaining required military capabilities across all DoD missions  
(DoD-6)

**High Risk Area.** The General Accounting Office has identified several high risk areas in the DoD. This report provides coverage of the Defense Infrastructure

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## Methodology

**Work Performed.** To evaluate the Military Departments' use and compliance with the Measurement Handbook, we initially interviewed DoD logistics officials to better understand the development and objectives of the Measurement Handbook as well as its relationship to the DBP. We then evaluated the Military Departments' effectiveness in computing depot maintenance capacity and utilization data for the June 1998 draft DBP. At nine maintenance depots, we interviewed responsible officials as to their opinions of the Measurement Handbook and its methodology. We also reviewed documentation (engineering drawings) maintained in support of the calculation process and verified the results by sampling workshops and making our own calculations using the Measurement Handbook. Although the maintenance depots may not have strictly used the Measurement Handbook, we could evaluate their compliance with much of the Measurement Handbook's methodology provided the maintenance depots made the calculations at the end of FY 1997 and maintained adequate documentation. For those maintenance depots that used unsanctioned guidance, did not maintain adequate documentation, or did not report the data in the June 1998 draft DBP, our reviews were generally limited to summary analyses of whether specific methodology of the Measurement Handbook was adhered to.

To evaluate whether the Measurement Handbook approach would enhance the overall credibility of DoD decisions affecting workload reductions and redistributions, we judgmentally determined whether the Measurement Handbook, as authored, contained sufficient guidance and control procedures to ensure its success. Our judgement was based on whether the Measurement Handbook's methodology should have prevented or at least mitigated the discrepancies identified during our review of capacity calculations performed at maintenance depots. Our judgement was also influenced by whether improvements recommended in our 1992 audit report were implemented.

**Statistical Sampling Methodology.** We used random numbers to select workshops for our review of work positions at maintenance activities. We limited the number of workshops selected to 1,000 work positions. We used random numbers to eliminate bias. The results of our review were not projected.

**Use of Computer-Processed Data.** We did not use computer-processed data to perform this audit.

**Audit Type, Dates, and Standards.** We performed this program audit from June through December 1998. The audit was made in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We included tests of management controls we considered necessary.

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**Contacts During the Audit.** We visited or contacted individuals and organizations within DoD. Further details are available upon request.

## **Management Control Program**

DoD Directive 5010.38, "Management Control Program," August 26, 1996, requires DoD organizations to implement a comprehensive system of management controls that provides reasonable assurance that programs are operating as intended and to evaluate the adequacy of the controls.

**Scope of Review of the Management Control Program.** We reviewed the management control program for each maintenance depot visited during the audit. Specifically, we determined whether the computation of capacity was reviewed as part of the management control program at each maintenance depot.

**Adequacy of Management Controls.** We identified material management control weaknesses as defined by DoD Directive 5010.38. The Military Departments' management controls for computing capacity at maintenance depots were not adequate to ensure the accuracy, validity, and uniformity of the capacity and utilization data reported to DoD. All recommendations in this report, if implemented, will assist in correcting the weaknesses. A copy of the report will be provided to the senior official responsible for management controls in the Military Departments.

**Adequacy of Management's Self-Evaluation.** Management at the maintenance depots did not identify the use of the Measurement Handbook as an assessable unit under the management control program and, therefore, did not identify or report the material management control weaknesses identified by the audit.

## **Summary of Prior Coverage**

Within the last 5 years, there have been no audits directly related to the audit objectives.

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## Appendix B. Capacity Data of Maintenance Depots Reported in the June 28, 1998, Draft Defense Depot Maintenance Council Business Plan

<u>Maintenance Organizations</u>	<u>FY 1997 Total Capacity (direct labor hours)</u>
Anniston Army Depot*	3,200,400
Corpus Christi Army Depot	4,336,700
Letterkenny Army Depot	2,082,300
Red River Army Depot	2,601,500
Tobyhanna Army Depot*	4,147,000
Cherry Point Naval Aviation Depot	4,298,000
Jacksonville Naval Aviation Depot*	4,769,000
North Island Naval Aviation Depot*	4,949,000
Norfolk Naval Shipyard*	12,000,000
Pearl Harbor Naval Shipyard	5,320,000
Portsmouth Naval Shipyard	7,028,000
Puget Sound Naval Shipyard*	14,000,000
Crane Naval Warfare Center – Surface	642,000
Keyport Naval Warfare Center – Undersea	734,000
Charleston, Norfolk, and San Diego Space and Naval Warfare Centers	660,000
Ogden Air Logistics Center	8,275,000
Oklahoma Air Logistics Center*	8,285,000
Sacramento Air Logistics Center	7,480,000
San Antonio Air Logistics Center	6,310,000
Warner Robbins Air Logistics Center*	7,848,000
Marine Corps Logistics Base Albany	1,214,000
Marine Corps Logistics Base Barstow*	<u>1,037,000</u>
<b>Total</b>	<b>111,216,900</b>

\*Selected for review

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## **Appendix C. Report Distribution**

### **Office of the Secretary of Defense**

Under Secretary of Defense for Acquisition and Technology  
Deputy Under Secretary of Defense (Logistics)  
Assistant Deputy Under Secretary of Defense (Maintenance Policy, Programs, and Resources)  
Director, Joint Depot Maintenance Activities Group  
Director, Defense Logistics Studies Information Exchange  
Under Secretary of Defense (Comptroller)  
Deputy Chief Financial Officer  
Deputy Comptroller (Program/Budget)  
Assistant Secretary of Defense (Public Affairs)

### **Department of the Army**

Assistant Secretary of the Army (Financial Management and Comptroller)  
Assistant Secretary of the Army (Installations, Logistics, and Environment)  
Commander, Army Materiel Command  
Auditor General, Department of the Army

### **Department of the Navy**

Assistant Secretary of the Navy (Financial Management and Comptroller)  
Deputy Chief of Naval Operations (Logistics)  
Commander, Naval Air Systems Command  
Commander, Naval Sea Systems Command  
Auditor General, Department of the Navy  
Deputy Chief of Staff (Installations and Logistics), U S Marine Corps

### **Department of the Air Force**

Assistant Secretary of the Air Force (Financial Management and Comptroller)  
Deputy Chief of Staff (Installations and Logistics)  
Commander, Air Force Materiel Command  
Auditor General, Department of the Air Force

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## **Other Defense Organizations**

Director, Defense Contract Audit Agency  
Director, Defense Finance and Accounting Service  
Director, Defense Logistics Agency  
Director, Defense Security Cooperation Agency  
Director, National Security Agency  
Inspector General, National Security Agency  
Inspector General, Defense Intelligence Agency

## **Non-Defense Federal Organizations**

Office of Management and Budget  
General Accounting Office  
National Security and International Affairs Division  
Technical Information Center

## **Congressional Committees and Subcommittees, Chairman and Ranking Minority Member**

Senate Committee on Appropriations  
Senate Subcommittee on Defense, Committee on Appropriations  
Senate Committee on Armed Services  
Senate Committee on Governmental Affairs  
House Committee on Appropriations  
House Subcommittee on Defense, Committee on Appropriations  
House Committee on Armed Services  
House Committee on Government Reform  
House Subcommittee on Government Management, Information, and Technology,  
Committee on Government Reform  
House Subcommittee on National Security, Veterans Affairs, and International Relations,  
Committee on Government Reform  
House Subcommittee on Technology, Committee on Science



# Office of the Deputy Under Secretary of Defense (Logistics) Comments



ACQUISITION AND  
TECHNOLOGY

## OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON  
WASHINGTON DC 20301-3000


20 MAY 1999

### MEMORANDUM FOR THE INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE

SUBJECT: Audit Report on Depot Maintenance Capacity and Utilization Measurement  
(Project No. 8LB-5026)

This is to respond to your draft report dated March 24, 1999. You requested review and comments on your audit of depot maintenance capacity and utilization measurement. Our comments are attached. You tasked the Military Departments and the Joint Depot Maintenance Activities Group separately for their comments.

My point of contact on this matter is Mr. Hollis Hunter at (703) 695-0037 (DSN 225-0037)  
(hunterhb@acq.osd.mil)

*for*   
Roger W. Kallock  
Deputy Under Secretary  
of Defense (Logistics)

Attachment  
As stated

cc:  
ASN(FM&C)  
ASAF(FM&C)  
AG, DA  
JDMAG

**Comment on Audit Report  
Depot Maintenance Capacity and Utilization Measurement  
(Project No. 8LB-5026)**

1. Recommendation 1a. Concur with DoDIG recommendation on naval shipyard capacity data. Naval shipyard data cannot be computed using the current handbook methodology. This office will issue a tasking to the Navy within 30 days of the final audit report requesting a proposed revision to the handbook be submitted within 60 days of the tasking.
2. Recommendation 1b(1). Concur with DoDIG recommendation concerning an "as of" date. This office will issue a policy letter within 120 days of the final audit report providing interim measures, pending completion of a revision to the handbook, date to be determined.
3. Recommendation 1b(2). Propose alternative wording of the recommendation concerning establishing requirements for an independent validation. Recommend: "Establishing a Military Service responsibility on the requirements for an independent validation of the key aspects of the capacity and utilization measurement process." Specific key aspects will be identified in the handbook revision. Because of Military Service differences, it is more appropriate for OSD to specify what, while allowing the Military Services flexibility concerning the how. Action as above with policy letter and handbook revision.
4. Recommendation 1b(3). Propose alternative wording of the recommendation concerning assigning responsibility and delineating the qualifications of personnel. Recommend: "Establishing a Military Service requirement to specify assignment of responsibility and delineation of the qualifications of the personnel involved in the capacity and utilization calculation process." As above, it is more appropriate for OSD to specify what, while allowing the Military Services flexibility concerning how. Action as above with policy letter and handbook revision.
5. Recommendation 1b(4). Concur with DoDIG recommendations on field teams, general support personnel, and production shop categories. Action as above with policy letter and handbook revision.
6. Recommendation 1b(5). Concur with DoDIG recommendation on guidance for on-site and off-site depot-level maintenance. Action as above with policy letter and handbook revision.
7. Recommendation 1c. Propose alternative wording of the recommendation concerning establishing a standard package of training. Recommend: "We recommend the Assistant Secretary of the Army (Acquisition, Logistics and Technology), the Assistant Secretary of the Navy (Research, Development and Acquisition), and the Air Force Deputy Chief of Staff for Installations and Logistics establish a joint standard package for training depot maintenance personnel in the benefits and methodologies of measuring capacity and utilization data." Responsibility for training is a function more appropriately assigned under title 10 of the United

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States Code to the Military Services. The Joint Depot Maintenance Activities Group should be considered for this task.

8. Recommendation 2. The DoDIG recommended deletion of reference to the handbook in the Defense Depot Maintenance Business. The business plan has already been published. The wording was changed to read: "Capacity and utilization data were requested to be computed with the DoD 4151.18-H, the *DoD Depot Maintenance Capacity and Utilization Handbook*, 24 January 1997." The revised statement is correct. Capacity and utilization data in the business plan should be based on the handbook. We agree with the DoDIG that there were shortcomings in meeting that objective.

9. Recommendation 3a. Concur with DoDIG recommendation concerning management controls. Action for implementation, as you indicated, is a Military Service responsibility.

10. Recommendation 3b. Concur with DoDIG recommendation concerning revision of performance plans. Action for implementation, as you indicated, is a Military Service responsibility.

11. Material Control Weakness. The DoDIG identified a material management control weakness for computing capacity at maintenance depots. We concur with the DoDIG finding. We agree that implementing the recommendations contained in the audit (including the modifications in this response) will substantially assist in correcting the weakness.

# Director, Joint Depot Maintenance Activities Group Comments



JOINT DEPOT MAINTENANCE ACTIVITIES GROUP  
BLDG 280, DOOR 24  
4170 HEBBLE CREEK RD  
WRIGHT-PATTERSON AFB, OHIO 45433-5653

20 MAY 1999

MEMORANDUM FOR DIRECTOR, READINESS AND LOGISTICS  
SUPPORT DIRECTORATE  
INSPECTOR GENERAL  
DEPARTMENT OF DEFENSE  
400 ARMY NAVY DRIVE  
ARLINGTON, VIRGINIA 22202

FROM: JDMAG/MA

SUBJECT: Audit Report on Depot Maintenance Capacity and Utilization Measurement  
(Project no 8LB-5026) (DoDIG memo 24 Mar 99)

1. In response to the referenced letter we submit the following comments on the subject audit report:

a. Page 10: The paragraphs addressing the Jacksonville and North Island depots erroneously state that JDMAG added additional capacity to the data reported by these depots. JDMAG published data that was provided by Naval Air Systems Command. Nothing was added.

b. Recommendation 2: The draft report recommended deletion of the reference to the Capacity Handbook in the Defense Depot Maintenance Council (DDMC) Business Plan (DBP). The DBP has already been published. The reference in question was revised to read "Capacity and utilization data were requested to be computed in accordance with the DoD 4151.18-H, the *DoD Depot Maintenance Capacity and Utilization Handbook*, 24 January 1997, for all depot activities." The revised statement is correct. Capacity and utilization data in the DBP should be based on the Capacity Handbook methodology. We concur with the report finding that there were shortfalls in this regard.

2. JDMAG point of contact is Mr. Tom Gorman, DSN 986-2780, or commercial (937) 656-2780.

*James E. Reiman*

JAMES E. REIMAN, Col, USAF  
Director, Joint Depot Maintenance  
Activities Group

cc: (listed on following page)

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cc: USAMC/AMCLG-LM (D. Barton)  
COMNAVAIRSYSCOM/AIR-6.1.3.3 (A. Lopez)  
OPNAV/N431M (L. Normand)  
COMNAVSEASYSYSCOM/SEA-04X1 (D. Greemore)  
HQ AFMC/LGPY (L. Hall)  
COMMARCORLOGBASES/Code G323 (R. Vargo)  
OADUSD(L)MPP&R (H. Hunter)

# Department of the Air Force Comments



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS UNITED STATES AIR FORCE  
WASHINGTON DC

27 MAY 1999

MEMORANDUM FOR DIRECTOR, READINESS AND LOGISTICS SUPPORT  
DIRECTORATE  
INSPECTOR GENERAL  
DEPARTMENT OF DEFENSE

FROM: HQ USAF/IL  
1030 Air Force Pentagon  
Washington, DC 20330-1030

SUBJECT: Audit Report on Depot Maintenance Capacity and Utilization Measurement  
(Project 8LB-5026)

This is in reply to your memorandum requesting the Assistant Secretary of the Air Force (Financial Management and Comptroller) provide Air Force comments on the subject report.

We concur with the recommendation applicable to the military department as outlined in subject report.

My point of contact is Mr. Jim Hornick, AF/ILMM, at (703) 697-3859. DSN 227-3859. FAX DSN 227-3986 or e-mail [jim.hornick@pentagon.af.mil](mailto:jim.hornick@pentagon.af.mil)

A handwritten signature in black ink, appearing to read "Ronald L. Orr", is located above the typed name.

RONALD L. ORR  
Asst DCS/Installations & Logistics

## **Audit Team Members**

This report was prepared jointly by the Readiness and Logistics Support Directorate, Office of the Assistant Inspector General for Auditing, DoD, the Army Audit Agency, the Naval Audit Service, and the Air Force Audit Agency. The following personnel contributed to this report:

Shelton R. Young	Inspector General, DoD
Raymond D. Kidd	Inspector General, DoD
Tilghman A. Schraden	Inspector General, DoD
Thomas D. Kelly	Inspector General, DoD
Paul A. Hollister	Inspector General, DoD
Robert E. Schonewolf	Inspector General, DoD
Gregory S. Fulford	Inspector General, DoD
Glen B. Wolff	Inspector General, DoD
Anthony Gainey	Army Audit Agency
Lawrence Duncan	Naval Audit Service
Rex E. Runyon	Air Force Audit Agency
Kenneth Violette	Air Force Audit Agency